

Widely Tunable Quantum Cascade Laser (QCL) Local Oscillator for Infrared Heterodyne Earth Atmospheric Remote Spectrometer (IHEARS)

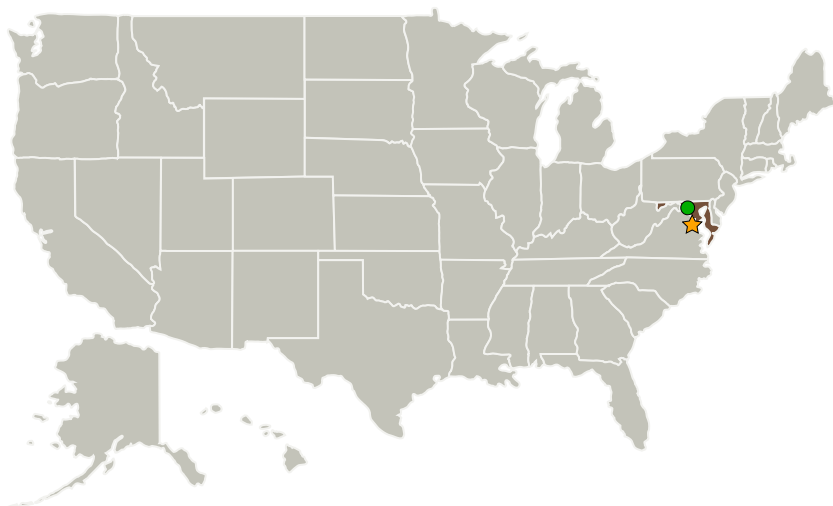
Completed Technology Project (2014 - 2014)



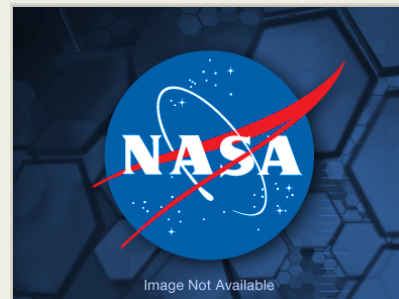
Project Introduction

Investigate use of widely tunable, external cavity quantum cascade laser (QCL) as local oscillator for Infrared Heterodyne Earth Atmospheric Remote Spectrometer (IHEARS) Science goals include unique study of chemical and physical processes in Earth's upper troposphere and stratosphere as they relate to climate change, ozone chemistry, composition and transport Performance goals include emitting wavelengths near 7.6 μ m and 10.4 μ m; single-mode CW output power > 20mW; frequency stability < 0.0003 cm⁻¹; input power <2W Enable smaller, lower cost missions compared to current spectrometers in the 7-12 μ m region Enable accurate retrieval gas composition, temperature and winds from the same measured spectrum

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ NASA Headquarters(HQ)	Lead Organization	NASA Center	Washington, District of Columbia
● Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



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Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Lead Center / Facility:

NASA Headquarters (HQ)

Responsible Program:

Earth Science

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Primary U.S. Work Locations

Maryland

Project Management

Program Director:

George J Komar

Principal Investigator:

Theodor Kostiuk

Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.1 Detectors and Focal Planes

Target Destination

Earth